

ABSTRACT

Multi-user detection method

Multi-user detection method with elimination of interference between users, each user transmitting modulated data in the form of symbols on a transmission channel, each transmission channel (k) comprising at least one propagation path (i) and each propagation path arriving at an array of reception antennae (ℓ) according to a direction of arrival ($\theta_{i,k}$), the method comprising at least one sequence of steps for each user (k), each sequence comprising:

(a) a reception step (600_k, 700_k, 800_k, 800, 900) decomposing each antenna signal into filtered signals ($x_{\ell,i,k}$) issuing from the different paths (i) of the said user (k) and combining the said filtered signals by means of a first plurality of coefficients ($b_{\ell,i,k}$, $c_{i,k}$) in order to form an estimation (z_k) of the signal transmitted by the user;

(b) a step of estimating (670_k, 770_k, 870_k, 870, 970) the contribution ($(x_{\ell,k}) \ell=1..L$) of the user to the signals received by the different antennae from the said estimation of the signal transmitted and a second plurality of coefficients ($u_{i,k}$, $w_{\ell,i,k}$) obtained from the said first plurality of coefficients;

(c) a step of eliminating interference (680_k, 780_k, 880_k, 880, 980) subtracting from the antenna signals the contribution estimated at step (b) in order to obtain cleaned antenna signals;

the cleaned antenna signals supplied by at least one first sequence being used as antenna signals by at least one second sequence.

Fig. 6